



**COMPANY  
NUMBER**

34704

**PRODUCT  
SERIAL NO.**

66

**LABEL  
APPROVAL  
DATE**

5-30-96



# CHLORPYRIFOS 4E INSECTICIDE

**ACCEPTED**  
MAY 30 1996  
EPA Reg. No. 34704-66

To be applied only by or under the direct supervision of trained applicators responsible for insect control programs.  
**Organophosphate Insecticide**

**ACTIVE INGREDIENTS**  
Chlorpyrifos [O,O-diethyl O-(3,5,6-trichloro-2-pyridinyl) phosphorothioate] ..... 41.2%

**INERT INGREDIENTS\*** ..... 58.8%

**TOTAL** ..... 100.0%

Contains 4 pounds of chlorpyrifos per gallon.  
\*This product contains xylene-range aromatics.

- Controls Numerous Pests in the Following Areas:**
- Production Nursery/Outdoor Uses of Ornamentals
  - Soil Treatments
  - Dormant Spray of Tree Pests
  - Pre-Plant Incorporation of Field Grown Nursery Stock
  - Shade, Flowering & Evergreen Trees
  - Residential Citrus, Fruit & Nut Trees
  - Turf & Other Outdoor Uses
  - Outside Surfaces & Around Buildings
  - Indoors

## KEEP OUT OF REACH OF CHILDREN WARNING AVISO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand this label, find someone to explain it to you in detail.)

See Below For Additional Precautionary Statements

EPA REG. NO. 34704-66      EPA EST. NO. \_\_\_\_\_  
5297      NET CONTENTS 1 GAL. (3.78 L)      EXP06Y95

### PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS & DOMESTIC ANIMALS

## KEEP OUT OF REACH OF CHILDREN WARNING AVISO

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May Be Fatal If Swallowed • Absorption Through Skin May Be Fatal • Causes Substantial But Temporary Eye Injury • Causes Skin Irritation  
Do not get in eyes, on skin or clothing. Avoid breathing vapors and spray mist. Handle concentrate in a ventilated area. Keep away from food, feedstuffs and water supplies.

**Personal Protective Equipment:**  
Some materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for category (F) on the EPA chemical resistance category selection chart.  
**WPS Uses:** Applicators and other handlers who handle this pesticide for any use covered by the Worker Protection Standard (40 CFR Part 170)—in general, agricultural-plant uses are covered—must wear: coveralls over short-sleeved shirt and short pants, chemical-resistant gloves, such as: barrier laminate, butyl rubber, nitrile rubber or viton, chemical-resistant footwear plus socks, protective eyewear, chemical-resistant headgear for overhead exposure and chemical-resistant apron when cleaning equipment, mixing, or loading.  
**Non-WPS Uses:** Applicators and other handlers who handle this pesticide for any use NOT covered by the Worker Protection Stand-

ard (40 CFR part 170)—in general, only agricultural-plant uses are covered by the WPS—must wear: long-sleeved shirt and long pants, chemical resistant gloves such as barrier laminate, butyl rubber or viton, chemical-resistant footwear plus socks, protective eyewear.  
Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them.  
Follow manufacturer's instructions for cleaning and maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.  
**Engineering controls statements:** When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets with requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240 (d) (4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

**USER SAFETY RECOMMENDATIONS**  
Users should:  
Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.  
Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.  
Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

**ENVIRONMENTAL HAZARDS**  
This product is highly toxic to bees exposed to direct treatment or residues on plants. Protective information may be obtained from your Cooperative Agricultural Extension Service.  
This pesticide is extremely toxic to fish, birds, and other wildlife. Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Drift and runoff from treated areas may be hazardous to aquatic organisms in adjacent aquatic sites. Cover or incorporate spills. Do not contaminate water by cleaning of equipment or disposal of equipment washwaters.

**STATEMENT OF PRACTICAL TREATMENT**  
If swallowed: Call a physician or Poison Control Center immediately. Do not induce vomiting. Contains an aromatic petroleum solvent. Do not give anything by mouth to an unconscious person.  
If on skin: Immediately wash with plenty of soap and water. Get medical attention.  
If in eyes: Flush with plenty of water for 15 minutes. Get medical attention.  
If inhaled: Remove to fresh air if symptoms of cholinesterase inhibition appear and get medical attention immediately.  
**Note to physician:** Chlorpyrifos is a cholinesterase inhibitor. If not symptomatically. If exposed, plasma and red blood cell cholinesterase tests may indicate significance of exposure (baseline data are useful). Atropine, only by injection, is the preferable antidote. Oximes, such as 2-PAM/protopam, may be therapeutic if used early; however, use only in conjunction with atropine. In case of severe acute poisoning, use antidote immediately after establishing an open airway and respiration.

**PHYSICAL AND CHEMICAL HAZARDS**  
**COMBUSTIBLE.** Do Not Use, Pour, Spill, or Store Near Heat or Open Flame. Do not cut or weld container.

**DIRECTIONS FOR USE**  
It is a violation of Federal law to use this product in a manner inconsistent with its labeling.  
For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.  
Do not apply this product through any type of irrigation system.

# CHLORPYRIFOS 4E INSECTICIDE

EPA REG. NO. 34704-66

2913

## AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE), and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is: coveralls over short-sleeved shirt and short pants, chemical-resistant gloves, such as: barrier laminate, butyl rubber, nitrile rubber or viton, chemical-resistant footwear plus socks, protective eyewear, chemical-resistant headgear for overhead exposure.

## NON-AGRICULTURAL USE REQUIREMENTS

Keep children and pets off treated area during application and until sprays have dried.

Do not allow public use of treated areas during application or until spray has dried.

## STORAGE AND DISPOSAL

**PROHIBITIONS:** Do not contaminate water, food, or feed by storage or disposal. Do not store under conditions which might adversely affect the container or its ability to function properly.

**STORAGE:** Store in safe manner. Store in original container only. Keep container tightly closed when not in use. Reduce stacking height where local conditions can affect package strength. Personnel should use clothing and equipment consistent with good pesticide handling.

**PESTICIDE DISPOSAL:** Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

**CONTAINER DISPOSAL: Metal:** Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities. **Plastic:** Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

## General Information

Chlorpyrifos 4E is an emulsifiable concentrate for use to control pests injurious to turf, soil, buildings (inside and outside), ornamentals and fruit, nut and citrus trees. The pests controlled are listed in the accompanying tables. Chlorpyrifos 4E is compatible with insecticides, miticides and fungicides commonly recommended except for alkaline materials such as Bordeaux mixture and lime. It is always recommended that a small jar compatibility test using proper proportions of chemicals and water be run to check for physical compatibility prior to tank mixing.

**Attention:** Keep out of fish pools and other bodies of water. Do not treat vegetable gardens. Do not allow livestock to graze in treated areas. Do not feed treated grass cuttings (hay) or seed screenings to livestock or use hay for livestock bedding. Do not use in poultry houses and greenhouses.

# CHLORPYRIFOS 4E INSECTICIDE

EPA REG. NO. 34704-66

## Ornamentals Growing Outdoors or in Nurseries

Use Chlorpyrifos 4E to treat flowers, shrubs, evergreens, vines, shade and flowering trees and non-bearing fruit, nut and citrus trees found to be infested with pests listed in the following table. Dilute Chlorpyrifos 4E with water according to directions given in the table and apply using suitable hand- or power-operated spray equipment in a manner to provide complete and uniform coverage. For best results, apply a coarse spray to thoroughly wet both upper and lower leaf surfaces and infested limb and trunk areas. Attempt to penetrate dense foliage, but avoid overspraying to the point of excessive runoff. Treat when pests appear and repeat at 7 to 10 day intervals, if needed. Consult your State Agricultural Experiment Station or Extension Service Specialist for application timing and other specific use information. For nurseries, when using spray equipment delivering less than 200 gallons of finished spray per acre, use the rate recommended in the per acre column. Uniform coverage is critical for effective insect and mite control.

Note: Environmental factors have significant effects on phytotoxic expression. Chlorpyrifos 4E has been tested on numerous ornamental plants without causing serious phytotoxicity at recommended use rates. Some varieties of azaleas, camellias, poinsettias, rose bushes, or variegated ivy have shown varying degrees of phytotoxicity following treatment with Chlorpyrifos 4E. Before treating large numbers of plants (especially those listed above), it is recommended that a small block of plants be treated and observed for 7 to 10 days to determine phytotoxic potential.

Note: The user assumes responsibility for determining if Chlorpyrifos 4E is safe to treated plants under commercial growing conditions.

Pest†	Amount of Chlorpyrifos 4E in Water to Make		Specific Directions
	Per Acre	100 gallons	
Adelgids (Cooley) (Eastern spruce galls) (Pine bark) Ants (including foraging fire ants) Aphids (Apple) (Chrysanthemum) (Cottonwood) (Elm leaf) (Peach) (Rose) (Spirea) (Woolly) Armyworms (Fall) (Yellowstriped) Bagworms <sup>1</sup> Boxelder bugs Cankerworms Carpenter ants <sup>2</sup> Catalpa sphinx Chiggers Citrus mealy bugs Cockroaches (American) (Brownbanded) (German) (Oriental) (Smokey brown) Elm spanworms Fall webworms <sup>4</sup> Grasshoppers Green fruitworms Hornworms Jackpine budworms Juniper webworms Katydid Lace bugs Leafhoppers Leafrollers <sup>2</sup> Maple leafcutters <sup>3</sup> Mites <sup>4</sup> (Clover) (Red spider) (Southern red) (Spruce spider) (Twospotted spider) Oleander caterpillars Orange tortrix Periodical cicada Plant bugs Poplar tentmaker Psyllids Puss caterpillars Rose chafers Sawflies, exposed (Pin oak) (Pine) (Redheaded) Sowbugs Spittlebugs Spring elm caterpillars Springtails Spruce budworms (Eastern) (Western) Tent caterpillars (Eastern) (Forest) (Western) Thornbug Walnut caterpillars Whiteflies Yellownecked caterpillars	1 pt-1 qt	8-16 fl oz	1. For bagworms, treat when larvae are small and actively feeding. 2. For effective control of leafrollers, spray should be applied before leaves are tightly rolled. 3. For effective control of maple leafcutters on maple trees, apply spray to larvae as cases are being formed. Do not treat sugar maple trees intended for maple syrup production. 4. For effective control of spider mites when large numbers of eggs are present, apply a second spray 3 - 5 days in the South or 7 - 10 days in the North after initial treatment to control newly-hatched nymphs. 5. Locate carpenter ant nest, if possible, and drench thoroughly. 6. For control of fall webworm, directly spray into web and immediately adjacent foliage.

†Superscripts refer to Specific Directions.

4813

# CHLORPYRIFOS 4E INSECTICIDE

EPA REG. NO. 34704-66

Pest†	Amount of Chlorpyrifos 4E in Water to Make		Specific Directions
	Per Acre	100 gallons	
Armyworms (Beet) Beetles (Fuller rose) (Native elm bark) <sup>1</sup> Browntail moth Cutworms Leafhoppers Mahogany webworms Mealybugs Mimosa webworms Moths (Browntail) (Cypress tip) (Douglas fir tussock) (European pine shoot) (Gypsy) <sup>2</sup> (Holly bud) (Nantucket pine hp) (Pandora) (Pitch pine tip) (Subtropical pine tip) (Tussock) Oakworms (California) (Orangestriped) (Redhumped) Redhumped caterpillars Thrips (exposed) Weevils (Blackvine) <sup>3</sup> (Pine reproduction) (Yellow poplar)	1 qt	1 pt	<ol style="list-style-type: none"> <li>1. To reduce twig and branch feeding by bark beetles, applications should be made in the spring or early summer.</li> <li>2. To kill migrating and invading gypsy moth larvae, treat trunks and foliage.</li> <li>3. Blackvine weevils are night feeders. Late afternoon spraying will maximize control.</li> </ol>
Foliar feeding Beetles <sup>1</sup> (Blister leaf) (Cottonwood leaf) <sup>1</sup> (Elm leaf) (Flea) (Fuller rose) (Japanese) (June) (Willow leaf)	1 qt	1 pt to 1 qt	<ol style="list-style-type: none"> <li>1. For cottonwood leaf beetles, use Chlorpyrifos 4E in water to control larvae and adults infesting cottonwoods. Make the treatment when field counts indicate damaging beetle populations are developing or present.</li> </ol>
Borers <sup>1</sup> Clearwing moths (Ash) (Dogwood) (Lesser peachtree) (Lilac) (Oak) (Rhododendron) Metallic wood (Bronze birch) (Flatheaded appletree) (Twolined chestnut) Longhorned beetles (Locust) (Red oak) Cranberry girdler larvae <sup>2</sup> Leafminers Needleminers (Jeffrey pine) (Lodgepole pine) (Spruce) Scale insects <sup>3</sup> (Cottonycushion) (Cottony maple) (Euonymus) (Fletcher) (Florida wax) (Golden oak) (Hemispherical) (Lecanium) (Magnolia) (Oak kermes) (Oak lecanium) (Oystershell) (Pine needle) (San Jose) (Tea) (White birch) (White peach)	2 qt	1 qt	<ol style="list-style-type: none"> <li>1. For borers, apply Chlorpyrifos 4E to the trunks and lower limbs of trees and shrubs when the adults begin to emerge. Consult your State Agricultural Experiment Station or Extension Service Specialist for proper time to treat. Apply uniformly as a coarse low-pressure spray. Pheromone traps may aid in detection of adult clearwing moths.</li> <li>2. For cranberry girdler larvae, apply 1 quart of Chlorpyrifos 4E per acre. Direct spray at the base of tree using 50 gallons of water per acre. Irrigate immediately after application for soil penetration of 1-2 inches. Treat after egg laying during the summer.</li> <li>3. Time applications for control of scale insects when crawlers or first two stages of settled nymphs are present.</li> </ol>

†Superscripts refer to Specific Directions.

5913

# CHLORPYRIFOS 4E INSECTICIDE

EPA REG. NO. 34704-66

Pest†	Amount of Chlorpyrifos 4E in Water to Make		Specific Directions
	Per Acre	100 gallons	
Borers (Cottonwood) (Peachtree) <sup>1</sup>	1½ gal	3 qt	1. For peachtree borers, apply Chlorpyrifos 4E in water to flowering trees and shrubs of the genus <i>Prunus</i> as a trunk spray before newly-hatched larvae enter the trees. Apply as a coarse, low-pressure spray. Thoroughly wet all bark areas from ground level to scaffold limbs.
Beetles <sup>1</sup> (Includes Wood Infesting) (Ambrosia) (Anobiidae) (Black turpentine) (Cottonwood leaf) (Elm leaf) (European elm bark) (Flea) (Fuller rose) (Japanese) (June) (Native elm bark) <sup>2</sup> (Southern pine) (Willow leaf)	4 gal	2 gal	1. For preventive treatment, apply the spray to the main trunk of trees in the early spring or when threat of attack exists from nearby infested trees. For remedial treatment, apply the spray to the main trunk of infested trees when damage occurs but before adult beetles begin to emerge. 2. To prevent native elm bark beetles from overwintering in uninfested trees, apply Chlorpyrifos 4E in water to the bottom 9 ft of the trunk. Wet the trunk thoroughly but do not spray to runoff. Care should be taken to apply the spray right to the base of the root flare. Application can be made with either a backpack mistblower or a hydraulic pressure sprayer from spring through to early fall.

†Superscripts refer to Specific Directions.

## Ornamentals (Soil Treatment)

Use Chlorpyrifos 4E to treat potted, containerized, or balled and burlapped nursery stock to control the insects in the soil attached to the roots of these plants. Completely submerge the container with drain holes or root ball stabilized by burlap in a tank containing diluted Chlorpyrifos 4E. Do not remove burlap wrap or plastic containers with drain holes prior to submerging. Keep the container or root ball submerged until complete soil saturation has occurred, normally about 30 seconds.

**PRECAUTIONS:** During all operations (submerging, drenching, injecting), wear chemical resistant apron in addition to other PPE listed for applicators and other handlers. Application should be made in a well-ventilated area.

**Note:** Environmental factors significantly affect phytotoxicity. Chlorpyrifos 4E has been tested on numerous ornamental plants without causing serious phytotoxicity. However, because of the numerous varieties, grown, it is recommended that a small group of plants be treated at the recommended rate under the anticipated growing conditions and observed for phytotoxic symptoms for at least 7 days, before a large number of plants are treated.

**Note:** The professional user assumes responsibility for determining if Chlorpyrifos 4E is safe to treated plants under commercial growing conditions.

Pest†	Amount of Chlorpyrifos 4E in Water to Make		Specific Directions
	1 gallon	100 gallons	
Fire Ants <sup>1</sup>	1/25 fl oz	4 fl oz	1. An alternative treatment to submerging potted plants is to dilute 4 oz. of Chlorpyrifos 4E in 100 gals. of water. This dilution should be applied to the point of runoff on a twice-daily schedule for three consecutive days. Do not remove burlap wrap or container from plants prior to treatment.
White Grubs <sup>2</sup> Weevils <sup>3</sup> (Such as Black vine)	2/3 fl oz	2 qt	2. An alternative treatment to submerging containerized plants is to drench the container with the diluted insecticide solution applying approximately 10 to 12 fl. oz. of diluted insecticide solution per gallon of container size (4-5 fl. oz./100 cubic inches of container). The container media should be pre-moistened by irrigation or rainfall before drenching. Do not remove container from plants prior to treatment. 3. An alternate treatment to submerging balled and burlapped plants is to inject Chlorpyrifos 4E insecticide into the root ball. Equally distribute 1 to 3 quarts of the dilute Chlorpyrifos 4E solution per cubic foot of soil volume through an injection rod inserted into the soil ball surrounding the plant roots. Uniform distribution of the insecticide throughout the soil of the root ball is critical for effective control. It is recommended that the injection rod be inserted in at least four equally spaced locations around the stem of the plant at a 30-45 degree angle from the plant between the stem and the upper outer perimeter of the ball. This technique has been shown to be most effective with small root balls (up to 1.5 ft. diameter). Larger root balls may require more injection points to ensure thorough soil distribution of the insecticide. The injection rod should be coupled to a flow meter to monitor the correct volume applied per root ball using an injection pressure of at least 30 psi. The application should be made such that splash-back and runoff are minimized.
Coffee root mealybug <sup>2</sup>	1/8 fl. oz.	1 pint	

†Numbers in parentheses refer to Specific Directions.

## Ornamentals (Dormant Spray of Tree Pests)

Use Chlorpyrifos 4E as a dormant or delayed dormant spray at the rates indicated to control the listed insects. While Chlorpyrifos 4E may be used without oil, oil is recommended to control additional pests such as European red mite.

For high volume (dilute) sprays (200 to 600 gallons of spray mixture per acre), tank mix the specified dosage with 1 to 2 gallons of a petroleum spray oil recommended for dormant use per 100 gallons of water. Spray the entire tree to runoff using suitable ground spray equipment.

For low volume (concentrate) sprays (less than 200 gallons of spray mixture per acre), use the same amount of Chlorpyrifos 4E as for a dilute spray and apply in a manner that will ensure thorough coverage of the tree. Use oil as recommended by your State Agricultural Experiment Station or Extension Service Specialist.

**Precautions:** Because cold dry conditions may cause Chlorpyrifos 4E plus oil to infuse trees resulting in bud damage or drop, do not apply until rain or irrigation has replenished soil moisture such that bark and twigs are not desiccated. For nurseries: do not use more than 4 pints of Chlorpyrifos 4E per acre.

**Restrictions:** Make only one application during the dormant season except for control of the apple ermine moth. Do not allow meat or dairy animals to graze in treated areas.

6813

# CHLORPYRIFOS 4E INSECTICIDE

EPA REG. NO. 34704-66

Pest	Amount of Chlorpyrifos 4E in Water to Make			Specific Directions
	1 gallon	3 gallons	100 gallons	
Aphids (Mealy plum) (Rosy apple) (Woolly apple) Borers (Peach twig) Cutworms (Climbing) Leafrollers (Pandemis) Pear psylla adults Plant bugs Scale (San Jose)	1/12 - 1/8 fl oz	1/4 - 1/2 fl oz	1/2 - 1 pt	Tank mix with 1 - 2 gallons of a petroleum spray oil recommended for dormant use in 100 gallons of water.
Apple ermine moth	1/12 fl. oz.	1/4 fl. oz.	1/2 pint	For control on <i>Malus</i> species, make 2 applications at a 7-14 day interval in combination with a petroleum spray oil at the rate of 2-4% (volume:volume) in a spray to wet application to ensure thorough coverage of all stems and branches. When using tank mixtures, also follow all label directions for the mixing partner (oil). Use appropriate application equipment and spray volumes to ensure complete coverage of the plant(s) or control will be compromised.

## Ornamentals (Pre-Plant Incorporation Treatment of Field Grown Nursery Stock)

### White Grubs and White Fringed Beetles

Apply Chlorpyrifos 4E to soil and incorporate before transplanting or planting to control white grubs and white fringed beetles during transplant or seedling establishment. Apply to the soil surface as a broadcast spray at a rate of 4 quarts per acre using sufficient water to obtain adequate coverage. Do not aerially apply. On the same day of the treatment, incorporate the insecticide into the top 2 to 4 inches of the soil using a tandem disc, field cultivator or equivalent incorporation equipment capable of thorough soil mixing.

**Precaution:** Environmental factors and varietal variation can significantly affect the potential for phytotoxicity from pesticide use. Chlorpyrifos 4E insecticide has been evaluated at the above indicated rate on loblolly pine without phytotoxic effects. Growers should prepare and observe a small test plot as above in order to determine the potential phytotoxicity in species or varieties other than loblolly pine. The following procedure should be used: 1) Treat a small test block as above; 2) Seed or transplant the test species or variety and observe for symptoms of phytotoxicity for a minimum of 14 days following emergence or transplanting. **Note:** The professional user assumes responsibility for determining if Chlorpyrifos 4E is safe to treated plants under commercial growing conditions.

### Garden Symphylans

Apply Chlorpyrifos 4E as a preplant incorporated treatment to suppress garden symphylans on land to be planted to field grown ornamentals. Apply as a broadcast application to the soil surface at the rate of 2-4 quarts per acre in at least 10 gallons of water per acre. On the same day of treatment incorporate the insecticide to a depth of up to 8 inches using a disc, rotovator or other suitable equipment. Use the higher rate range for longer residual or where deeper incorporation is necessary.

**Precaution:** Environmental factors significantly affect phytotoxicity. Chlorpyrifos 4E has been tested on numerous ornamental plants without causing serious phytotoxicity. However, because of the numerous varieties grown, it is recommended that a small group of plants be treated at the recommended rate under the anticipated growing conditions and observed for phytotoxic symptoms for at least 7 days, before a large number of plants are treated. Do not blend Chlorpyrifos 4E with dry bulk fertilizer materials. **Note:** The professional user assumes responsibility for determining if Chlorpyrifos 4E is safe to treated plants under commercial growing conditions.

## Tree Pests

Use Chlorpyrifos 4E to treat shade and flowering trees, and evergreens found to be infested with pests listed in the following table. Dilute Chlorpyrifos 4E with water according to directions given in the table and apply using suitable hand- or power-operated spray equipment in a manner to provide complete and uniform coverage. For best results, apply a coarse spray to thoroughly wet both upper and lower leaf surfaces and to infested limb and trunk areas. Attempt to penetrate dense foliage, but avoid overspraying to the point of excessive runoff. Treat when pests appear and repeat at 7 to 10 day intervals, if needed.

Consult your State Agricultural Experiment Station or Extension Service Specialist for application timing and other specific use information.

Pest†	Amount of Chlorpyrifos 4E in Water to Make			Specific Directions
	1 gallon	3 gallons	100 gallons	
Adelgids (Cooley) (Eastern spruce gall) (Pine bark) Aphids (Apple) (Chrysanthemum) (Cottonwood) (Elm leaf) (Peach) (Rose) (Spirea) (Woolly) Bagworms' Boxelder bugs Cankerworms	1/12 fl oz	1/4 fl oz	8 fl oz	1. For bagworms, treat when larvae are small and actively feeding. 2. For effective control of leafrollers, spray should be applied before leaves are tightly rolled. 3. For maple leafcutters on maple trees, apply spray to larvae as cases are being formed. Do not treat sugar maple trees intended for maple syrup production. 4. For effective control of spider mites, when large numbers of eggs are present, apply a second spray after 3 - 5 days in the south or 7 - 10 days in the north after initial treatment to control newly-hatched nymphs. 5. For effective control of Fall webworms, direct spray into web and immediately surrounding foliage.

†Superscripts refer to Specific Directions.

# CHLORPYRIFOS 4E INSECTICIDE

EPA REG. NO. 34704-66

Pest†	Amount of Chlorpyrifos 4E in Water to Make			Specific Directions
	1 gallon	3 gallons	100 gallons	
Catalpa sphinx Citrus mealybugs Elm spanworms Fall webworms <sup>4</sup> Greensripped mapleworms Jackpine budworms Juniper webworms Katydid Lace bugs Leathoppers Leafrollers <sup>2</sup> Maple leafcutters <sup>3</sup> Mites <sup>4</sup> (Clover) (Red Spider) (Southern red) Oak skeletonizers Poplar tentmakers Puss caterpillars Sawflies, exposed (Pin oak) (Pine) Spring elm caterpillars Spruce budworms Tent caterpillars (Eastern) (Forest) (Western) Walnut caterpillars Western spruce budworms Yellownecked caterpillars	1/12 fl oz	1/4 fl oz	8 fl oz	
Beetles (Fuller rose) (Native elm bark) <sup>1</sup> Leafhoppers Mahogany webworms Mealybugs Mimosa webworms Moths (Browntail) (Cypress tip) (Douglas fir tussock) (European pine shoot) (Gypsy) <sup>2</sup> (Holly bud) (Nantucket pine tip) (Pandora) (Pitch pine tip) (Subtropical pine tip) (Tussock) Oakworms (California) (Orangestriped) (Redhumped) Redhumped caterpillars Thrips (exposed) Weevils (Blackvine) <sup>3</sup> (Pine reproduction) (Yellow poplar)	1/6 fl oz	1/2 fl oz	1 pt	<ol style="list-style-type: none"> <li>1. To reduce foliar feeding on twigs and branches by beetles, applications should be made in the spring or early summer.</li> <li>2. To kill migrating and invading gypsy moth larvae, treat trunk and foliage.</li> <li>3. Blackvine weevils are night feeders. Late afternoon spraying will maximize control.</li> </ol>
Beetles (Cottonwood leaf) <sup>1</sup> (Elm leaf) (Flea) (Willow leaf)	1/8 - 1/3 fl oz	1/2 - 1 fl oz	1 pt - 1 qt	<ol style="list-style-type: none"> <li>1. For cottonwood leaf beetles, use Chlorpyrifos 4E in water to control larvae and adults infesting cottonwoods. Make the treatment when field counts indicate damaging beetle populations are developing or present. For seedlings, use 8 - 20 gal of spray volume per acre.</li> </ol>
Borers <sup>1</sup> Clearwing moths (Ash) (Dogwood) (Lesser peachtree) (Lilac) (Oak) (Rhododendron) Metallic wood (Bronze birch) (Flatheaded apple tree) (Twolined chestnut) Longhorned beetles (Locust) (Red oak) Cranberry girdler larvae <sup>2</sup> Leafminers	1/3 fl oz	1 fl oz	1 qt	<ol style="list-style-type: none"> <li>1. For borers, apply Chlorpyrifos 4E to the trunks and lower limbs of trees and shrubs when the adults begin to emerge. Consult your local State Agricultural Experimental Station or Extension Service Specialist for proper time to treat. Apply uniformly as a coarse low-pressure spray. Pheromone traps may aid in detection of adult clearwing moths.</li> <li>2. For cranberry girdler larvae infesting Douglas fir seedlings, apply 1 quart of Chlorpyrifos 4E per acre. Direct spray at the lower crown and stems using 50 gal of water per acre. Irrigate immediately after application for soil penetration of 1 - 2 inches. Treat after egg laying during the summer.</li> <li>3. Time applications for control of scale insects when crawlers or first two stages of settled nymphs are present.</li> </ol>

†Superscripts refer to Specific Directions.



# CHLORPYRIFOS 4E INSECTICIDE

EPA REG. NO. 34704-66

Pest †	Amount of Chlorpyrifos 4E in Water to Make			Specific Directions
	1 gallon	3 gallons	100 gallons	
Needleminers (Jeffrey pine) (Lodgepole pine) (Spruce) Scale insects <sup>2</sup> (Cottonycushion) (Cottony maple) (Euonymus) (Fletcher) (Florida wax) (Golden oak) (Hemispherical) (Lecanium) (Magnolia) (Oak kermes) (Oystershell) (Pine needle) (San Jose) (Tea) (White birch)	1/3 fl oz	1 fl oz	1 qt	
Northern pine weevil Pales weevil	1 fl. oz.	3 fl. oz.	3 quarts	Apply as a cut stump spray or drench in winter or early spring.
Borers (Cottonwood) (Peachtree) <sup>1</sup>	1 fl oz	3 fl oz	3 qt	1. For peachtree borers, apply Chlorpyrifos 4E in water to flowering trees and shrubs of the genus <i>Prunus</i> as a trunk spray before newly-hatched larvae enter the trees. Apply as a coarse low pressure spray. Thoroughly wet all bark areas from ground level to scaffold limbs.
Beetles <sup>1</sup> (Cottonwood leaf) (Elm leaf) (Flea) (Fuller rose) (Native elm bark) <sup>2</sup> (Willow leaf)	1 1/3 fl oz	4 fl oz	1 gal	1. For preventive treatment, apply the spray to the main trunk of trees in the early spring or when threat of attack exists from nearby infested trees. For remedial treatment, apply the spray to the main trunk of infested trees or logs when damage occurs but before adult beetles begin to emerge. 2. To prevent native elm bark beetles from overwintering in uninfested trees, apply a dilution of 1 gal. per 100 gals. of water (1 1/3 fl. oz. per gallon) as a spray to the bottom 9 feet of the trunk. Wet the trunk thoroughly but do not spray to runoff. Care should be taken to apply the spray right to the base of the root flare. Applications can be made from Spring to early Fall. To reduce twig and branch feeding on trees deemed to be of high value, apply as a spray to the tree crown using a dilution of 1 gal. per 100 gals. of water (1 1/3 fl. oz. per gallon). Applications should be made in the Spring or early Summer using a sprayer that will give thorough coverage to the tree crown.
Beetles <sup>1</sup> (Ambrosia) (Anobiidae) (Bark) (Black turpentine) (Blister) (European elm bark) (Ips) (Japanese) (June) (Southern pine) (Spruce) Carpenter ants Termites	2 2/3 fl oz	8 fl oz	2 gal	1. For preventive treatment, apply the spray to the main trunk of trees in the early Spring or when threat of attack exists from nearby infested trees. For remedial treatment, apply the spray to the main trunk of infested trees or logs or before adult beetles begin to emerge.
Weevils (Such as: Northern pine, Pitch eating, Twig)	5 1/3 fl. oz.	16 fl. oz.	4 gal.	For pine seedlings, treat immediately after transplanting. Treat each seedling with enough spray to thoroughly wet the foliage and stem to the point of runoff. For nurseries, do not use more than 6 gallons of spray dilution per acre.

†Superscripts refer to Specific Directions.

### Citrus

Use Chlorpyrifos 4E to treat grapefruit, lemon, orange and other citrus trees or tree fruit. Use lower rates for light infestations, higher rates for heavy infestations. Treat when insects become a problem or in accordance with the local spray schedule recommended by your State Extension Service specialist. Do not apply to citrus if temperature exceeds 95°F. Chlorpyrifos 4E is highly toxic to bees exposed to direct treatment. Do not apply to drought, heat stressed, or flowering trees.

Restrictions: Do not make more than two applications per fruit year. Do not make a second application within 30 days of the first application. Do not pick fruit for consumption until 21 days after application. Rate applied must not exceed 1/6 fl. oz. per gallon or 1 pint per 100 gallons.

Pest	Amount of Chlorpyrifos 4E in Water to Make			Specific Directions
	1 gallon	3 gallons	100 gallons	
Aphids Katydid Lepidopterous larvae	1/10 - 1/5 fl oz	1/4 - 1/2 fl oz	1/2 - 1 pt	Use directions apply in all states.
Citrus thrips Mealybugs Scale insects (Black) (Brown soft) (California red) (Chaff) (Snow)	1/10 - 1/5 fl oz	1/4 - 1/2 fl oz	1/2 - 1 pt	Use directions apply in Florida only. In California, apply as outside foliar coverage for citrus thrips and mealybug. Thorough coverage of entire tree for scale insects. A petroleum spray oil recommended for use on citrus trees may be added to spray mixtures only at rates of up to 1.8 gallons per 100 gallons of water.
Citrus rust mite	1/10 - 1/5 fl oz	1/4 - 1/2 fl oz	1/2 - 1 pt	Use directions apply in Florida only.

# CHLORPYRIFOS 4E INSECTICIDE

EPA REG. NO. 34704-66

## Fruit and Nut Trees

Use Chlorpyrifos 4E to treat almond, apple, cherry, filbert, nectarine, peach, pecan, and walnut trees by spraying to the point of runoff. Observe local use directions for tank mix combinations especially with applications with Chlorpyrifos 4E plus spray oil. Dry or cold conditions may cause Chlorpyrifos 4E plus oil to infuse trees resulting in bud damage or drop; do not apply until rain or irrigation has replenished soil moisture such that bark and twigs are not desiccated. Do not apply when trees are stressed by drought.

Pest	Amount of Chlorpyrifos 4E			Specific Directions
	1 gallon	3 gallons	100 gallons	
Aphids (Such as: Apple, Black cherry, Black pecan, Filbert, Mealy plum, Rosy apple, Woolly apple, Yellow pecan) Apple maggot Borers (Such as: American plum, Dogwood, Lesser peachtree, Pacific flatheaded, Peach twig, Peachtree, Shothole) Cherry fruit fly Climbing cutworm Codling moth European apple sawfly European corn borer Eyespotted bud moth Fall webworm Filbert worm Grasshoppers* (Such as Lubber) Green fruitworm Hickory shuckworm Katydid Leaf rollers and tiers (Such as: Avocado leafroller, Filbert leafroller, Fruittree leafroller, Obliquebanded leafroller, Omnivorous leaftier, Orange tortrix, Pandemis leafroller, Redbanded leafroller, Variegated leafroller) Lepidopterous larvae Lesser appleworm Lygus sp. Mealybugs Mineola moth Mites* (Such as: European red, Pecan leaf scorch, Twospotted spider) Navel orangeworm Oriental fruit moth Pecan nut casebearer Pecan weevil Periodical cicada Phylloxera spp. Plum curculio Potato leafhopper Rose chafer Scales insects (Such as: European fruit lecanium, San Jose, Walnut) Spittlebug Spotted tentiform leafminer Stinkbug Tarnished plant bug Thrips Tufted apple budmoth Walnut husk fly Western tussock moth White apple leafhopper Winter moth	1/8 - 1/3 fl. oz.	1/2 - 1 fl. oz.	1 pt. - 1 quart	1. Lubber grasshoppers must be controlled when they are small (less than 1 inch in length) by direct contact with spray. 2. For effective control of spidermites, when large numbers of eggs are present, apply a second spray 3 to 5 days in the South or 7 to 10 days in the North after initial treatment to control newly hatched nymphs. 3. Time applications for control of scale insects when crawlers or first two stages of settled nymphs are present.
Scale insects* (Such as: Black scale, Brown soft scale, California red scale, Chaff scale, Florida red scale, Long scale, Purple scale, Snow scale)	1 - 2 fl. oz.	3-4 fl. oz.	1 - 2 quarts	

### Restrictions:

**Almonds, Filberts, Walnuts:** Make only one dormant/delayed dormant spray application and no more than three foliar spray applications on almonds per season, one dormant/delayed dormant spray application and no more than two foliar spray applications on walnuts per season, and no more than three foliar spray applications on filberts per season. Do not apply within 14 days of harvest.

**Apples:** Rate applied must not exceed 1/3 fl. oz. per gallon or 1 quart per 100 gallons. Make no more than 8 applications per season. Do not apply last treatment within 28 days before harvest or apply last two treatments closer than 21 days apart.

**Nectarines, Peaches (trunk sprays only):** Do not allow spray to contact fruit. Make only one application per season. Do not apply within 14 days of harvest.

1073

# CHLORPYRIFOS 4E INSECTICIDE

EPA REG. NO. 34704-66

**Pecans:** Rate applied must not exceed 1/3 fl. oz. per gallon or 1 quart per 100 gallons. Make no more than 5 applications per season. Do not apply within 28 days of harvest.

**Sour cherries:** Make no more than 8 applications per season. Do not apply within 14 days of harvest.

**Sweet cherries: (trunk and lower limb sprays only):** Rate applied must not exceed 1/3 fl. oz. per gallon or 1 quart per 100 gallons. Avoid spray contact with foliage (leaves) since premature leaf drop may result. Make only three applications per year. Do not apply within 6 days of harvest.

**Additional Precautions Specific to California:** Use a minimum of 250 gallons of total spray volume per acre. Do not use more than four gallons of spray oil per acre on almonds, peaches or nectarines. Do not use any adjuvants or surfactants in addition to or as a substitute for a petroleum spray oil in a tank mix with Chlorpyrifos 4E. Do not apply on almonds in the following counties in California: Butte, Colusa, Glenn, Solano, Tehama, Yolo and Yuba.

## Turf and Other Outdoor Uses

Use Chlorpyrifos 4E to control the pests listed in the following table by applying at the recommended dosages and in accordance with the directions given below or as recommended by your local Agricultural Extension Service Specialist. Dilute Chlorpyrifos 4E in water and apply as a coarse, low-pressure spray using suitable application equipment. Thoroughly water immediately after treatment to wash the insecticide into the turf, except as noted. For best results, the lawn should be moist at time of treatment. Spray when pests first appear; re-treat when needed.

Pest†	Amount of Chlorpyrifos 4E per		Specific Directions
	1000 sq ft	Acre	
Ticks <sup>1</sup> (American dog) (Cattle fever) (Gulf coast) (Lone star)	1/4 fl oz	1 1/2 pt	1. For control of ticks infesting, treat soil and other areas likely to serve as harbor-age sites for ticks that have removed themselves from their host. Spray surfaces to be treated until wet, but do not create excessive runoff.  Note: This application is intended as a premise spray only. Do not use as a direct spray on livestock or any sites which may come in contact with livestock.
Ants (including foraging fire ants) Armyworms (Beet) (Fall) (Yellowstriped) Centipedes Chiggers <sup>1</sup> Chinch bugs Clover mites Cutworms Crickets Deer Ticks <sup>5</sup> Earwigs Fiery skipper Fire ants (mounds) <sup>2</sup> Fleas Gnats Grasshoppers Greenbug aphids June beetles Leafhoppers Lucerne moths Millipedes Mites (Clover) (Bermudagrass stunt) (Formula grass) (Winter grain) Mosquitoes <sup>3</sup> Pillbugs Sod webworms <sup>4</sup> (lawn moths) Sowbugs Ticks <sup>1</sup>	3/4 fl oz	1 quart	1. Use Chlorpyrifos 4E for area control of ticks and chiggers infesting non-cropland areas such as turf and grassy areas, roadsides, footpaths and trails, picnic and camping sites, parks and other recreational areas where these pests are present and create a nuisance or a possible public health problem. Do not allow public use of treated areas during application or until spray has dried. Apply Chlorpyrifos 4E in water at the rate of 1/2 pint/acre (equivalent to 1/8 fl oz per 1,000 sq ft) using a hydraulic sprayer, mist applicator, knapsack sprayer, or other suitable hand- or power-operated spray equipment. Treat low underbrush, grassy areas, weeds, and ground surface and debris using enough spray volume to obtain thorough coverage, usually 40-100 gal/acre.  2. For individual fire ant mounds, apply Chlorpyrifos 4E as a drench, diluted at the rate of 1 fl oz per 4 gal of water.  Gently sprinkle a total of 1 gal of the diluted emulsion over the surface of each mound using a gentle spray (such as a sprinkler can). Thoroughly wet mound and surrounding areas to a 4 ft diameter (12 sq ft). For best results, apply in cool weather, 65-80°F, or in early morning or late evening hours. Treat new mounds as they appear. Pressurized sprays may disturb the ants and cause migration, reducing product effectiveness.  3. Mosquitoes coming to rest on areas treated for control of turf pests will be killed for varying periods of time after treatment, depending on exposure of treated areas to weathering conditions.  4. For sod webworms, watering or mowing of the treated area should be delayed for 12-24 hours after treatment.  5. For control of deer ticks, apply in water at the rate of 1 quart per acre or 3/4 fl. oz. per 1,000 sq. ft. Treat low underbrush, turf, grassy areas, weeds, and ground surface and debris, using enough spray volume to obtain thorough coverage.

# CHLORPYRIFOS 4E INSECTICIDE

EPA REG. NO. 34704-66

Pest†	Amount of Chlorpyrifos 4E per		Specific Directions
	1000 sq ft	Acre	
European crane fly	1 fl oz	1 1/2 quart	
Turfgrass weevil ( <i>Hyperodes</i> ) <sup>1</sup>	1 1/2 fl oz	2 quart	1. Spray suspected problem areas in mid-April and again in mid-May or as recommended by your local Agricultural Extension Service Specialist.
White grubs <sup>1</sup> (Black turfgrass ataeenius) (European chafer) (Japanese beetle larvae) (Southern and Northern masked chafer)	1 1/2-3 fl oz	2 quart - 1 gal	1. For white grubs, spray when grubs are young and actively feeding near the soil surface, usually during late July and August or as recommended by your local Agricultural Extension Service Specialist. Immediately after spraying, irrigate the treated area with 1/2 to 1 inch of water to wash the insecticide deep into the thatch or into the underlying soil.
Billbug adults, such as (Bluegrass) (Denver) (Hunting)	3/4 - 3 fl oz	1 quart - 1 gal	For billbugs, spray early in the season when adults first appear. Retreat as needed.
Mole Crickets	1 1/2 fl oz	2 quart	For mole crickets in turfgrass, apply through high pressure injection or other suitable subsurface placement application equipment. Depending on the application equipment used, follow the manufacturer's recommendation for calibration and the volume of spray per acre needed to provide control or as recommended by your local Agricultural Extension Service Specialist. For best results, apply when young nymphs are active.
Imported Fire Ants in commercial sod		2 gallons	Apply Chlorpyrifos 4E as a spray to the area of sod to be cut. Immediately after application, irrigate treated area with at least 1/2 acre-inch of water or a sufficient volume to thoroughly soak below the cut line. Do not apply a volume or rate of water to cause runoff. Sod can be cut when vegetation has dried and when soil is moist, but not wet.

### Outside Surfaces and Around Buildings (Including Perimeter Treatments)

Chlorpyrifos 4E may be applied as a residual spray to and around outside surfaces of residential and nonresidential buildings and structures. Permitted areas of use include but are not limited to: crawl spaces, decks, driveways, eaves, fences, foundations, garages, patios, porches, refuse dumps, walkways, walls, window and door frames and other areas where pests congregate or have been seen. Adults, children or pets should not contact treated surfaces until spray has dried. Keep out of fish pools and other bodies of water. Do not treat vegetable gardens. Do not allow livestock to graze in treated areas. Do not feed treated grass cuttings (hay) or seed screenings to livestock, nor use treated hay for livestock bedding. Repeat treatment as needed to maintain effectiveness. Unless prohibited by a product's label, users, at their own discretion can tank mix pesticides currently labeled for similar use patterns. It is always recommended that a small jar compatibility test using proper proportions be run to check for physical compatibility prior to tank mixing. Do not tank mix this product with products containing dichlorvos (DDVP).

Pest†	Amount of Chlorpyrifos 4E In Water to Make			Specific Directions
	1 gallon	10 gallons	50 gallons	
		<b>For Band Treatment<sup>1</sup></b>		
Ants Bees Beetles Boxelder bugs (or other true bugs) Carpenter ants Centipedes Clover mites Cockroaches†† Crickets Earwigs Elm leaf beetles (adults) Firebrats Fleas Flies Hornets Millipedes Mosquitoes Pillbugs Scorpions <sup>2</sup> Silverfish Sowbugs Spiders Springtails Ticks Wasps Yellowjackets	1/4 teaspoon	3/4 fl oz	4 fl oz	1. To help prevent infestation of buildings, treat a band of soil 6 - 10 ft wide around and adjacent to buildings, also the building foundation to a height of 2 - 3 ft, where pests are active and may find entrance. Use 4 fl oz of Chlorpyrifos 4E per 50 gal of water and apply as a coarse spray at the rate of about 10 gal spray mixture per 1,000 sq ft to thoroughly and uniformly wet the band area.  2. For scorpions, treat or remove accumulations of lumber, firewood, and other materials which serve as insect harborage sites. Make a thorough perimeter treatment around the structure using directions in (1.) above.
	<b>For Outside Surfaces</b>			
	1 1/3 fl oz	13 1/3 fl oz	2 qt	

†Superscripts refer to Specific Directions.  
††Controls American, Asian, Brownbanded, German, Oriental and Smokey brown cockroaches.

# CHLORPYRIFOS 4E INSECTICIDE

EPA REG. NO. 34704-66

## Ants, Termites and Miscellaneous Pests

Pest	Amount of Chlorpyrifos 4E in Water to Make			Specific Directions
	1 gallon	3 gallons	100 gallons	
Ants Cockroaches (Such as: American, Asian, Brownbanded, German, Oriental, Smokybrown, Wood) Fire ants (foraging workers) Fire ants (mounds) <sup>1</sup> Sowbugs Springtails	1/8 fl. oz.	1/2 fl. oz.	1 pint	1. For mounds apply as a drench. Dilute 1 fl. oz. per 4 gallons of water. Gently sprinkle 1-2 gallons of the diluted insecticide over the surface of each mound and surrounding areas to a 2 foot diameter. For best results, apply in cool weather, 65-80°F or in early morning or late evening hours. Treat new mounds as they appear. Pressurized sprays may disturb the ants and cause migration, reducing product effectiveness.
Carpenter Ants <sup>2</sup> Termites	2 2/3 fl. oz.	8 fl. oz.	2 gallons	2. Locate nests and drench thoroughly.

### General Control of Wood-Infesting Insects

Chlorpyrifos 4E is intended to be mixed with water and applied as a general surface or localized injection treatment with pressurized sprayers or other equipment suitable for applying insecticides to localized areas.

Contact with treated surfaces should be avoided until spray has dried. Cover or remove exposed foods before treatment. Before spraying, remove pests and cover aquaria, i.e., fishbowls, and turn off air pump. Do not apply where electrical short circuits could occur. Do not use in structures housing animals which are intended for or which produce products to be used for food purposes, i.e., poultry houses. Thoroughly ventilating treated areas following broadcast treatments can reduce potential odors and speed drying. Ventilation in buildings with closed air circulating systems can be improved by adjusting ventilation systems to include outside air.

When used in accordance with label directions, Chlorpyrifos 4E can be applied to residential and nonresidential buildings and structures for control of wood-infesting insects. Permitted areas of use include, but are not limited to: wood surfaces, voids and channels in damaged wood, gaps between wooden members, wall voids, junctions between wood and foundation.

Mixing Directions: To make a 0.5% water based spray, mix 1 1/3 fl. oz. of Chlorpyrifos 4E per each gallon of spray mixture. To make a 1.0% water based spray, mix 2 2/3 fl. oz. of Chlorpyrifos 4E per each gallon of spray mixture.

A stable emulsion can be formed by first adding approximately one-half water to a spray tank followed by adding the proper amount of Chlorpyrifos 4E. Close the tank and shake vigorously for 5 to 10 minutes.

Tank Mixing: Unless prohibited by a product's label, users, at their own discretion can tank mix pesticides currently labeled for similar use patterns. It is always recommended that a small jar compatibility test using proper proportions be run to check for physical compatibility prior to tank mixing. Do not tank mix this product with products containing dichlorvos. (DDVP).

Application Methods: This product may be applied either as a coarse spray or by brushing onto targeted surfaces. Equipment capable of delivering a coarse, low pressure (about 25 psi) spray is recommended for treatment of large or overhead areas. Inaccessible areas such as wall voids can be treated by injecting the spray mixture under low pressure (about 20 psi) through drilled openings. Use sufficient amount of spray dilution to cover the area to the point of wetness but avoid spraying to the point of runoff.

It is recommended that, when spraying overhead interior areas of buildings, surfaces below areas being treated be covered with plastic sheeting or other material which could be disposed of by placing in trash.

Beetles <sup>1</sup> (Anobiidae) (Bostrichidae) (Cerambycidae) (Lyctidae) Carpenter ants <sup>2</sup> (and other wood-infesting ants) Carpenter bees Termites <sup>3</sup>	<p>1. Beetles may be controlled by applying spray mixture to infested areas, or areas where infestations are likely to occur. This includes but is not limited to wood surfaces, voids, and channels in damaged wood, in spaces between wooden member of a structure, and junctions between wood and foundations. Use the following guidelines to determine appropriate rates of application:</p> <p>New Wood, (typically less than 10 years of age) apply at about 1 gallon of dilution per 150 square feet.</p> <p>Old Wood, (typically greater than 10 years of age) apply at about 1 gallon of dilution per 100 square feet.</p> <p>2. Wood-Infesting ants may be controlled by applying spray mixture around doors and windows, cracks or crevices, or other areas where ants may enter, crawl, or hide.</p> <p>Primary colonies are typically found outside through an exterior inspection. Correction of sanitation and structural deficiencies or landscape modifications may be necessary for effective control.</p> <p>3. Termites can be treated by applying spray mixture to infested areas, or areas where infestations are likely to occur. This includes but is not limited to wood surfaces, voids and channels in damaged wood, in spaces between wooden members of a structure, and junctions between wood and foundations.</p> <p>This treatment is intended to kill localized infestations of workers and winged reproductive forms of termites and to prevent infestations for a temporary period. This application is not intended as a substitute for soil treatments.</p>
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Numbers refer to Specific Use Directions for Control of Wood-Infesting Insects.

### Pest Control Indoors

Use Chlorpyrifos 4E to control pests listed in the following table by applying at the recommended dosages. Use a 0.25% spray to control light infestations and a 0.5% spray to quickly reduce heavy infestations or as directed. To prepare the spray, dilute Chlorpyrifos 4E with water or with a suitable base oil. Use only deodorized kerosene for oil-based sprays in food handling establishments.

Applications may be made within residential buildings, including homes and apartment buildings.

Applications may also be made within mausoleums and nonfood areas of industrial, institutional, and commercial buildings, including hospitals, stores, manufacturing plants, and warehouses. Applications may be made within food handling establishments. This includes, but is not limited to, restaurants, grocery stores, bakeries, bottling plants, canneries, and grain mills. Any individual spot treatment may not exceed 2 square feet.

Apply as a coarse, low pressure spray (20 psi or less) or with a paint brush to localized areas in and around both food and non-food areas. Treat where insects are found or normally occur, including dark corners of rooms and closets; floor drains; cracks and crevices in walls; along and behind baseboards; beneath and behind sinks, stoves, refrigerators, refrigerator units, and cabinets; and around plumbing and other utility installations.

In food-handling establishments use only as a spot treatment. Spot treatment may encompass crack and crevice treatments by applying small amounts of material directly into openings leading to voids and hollow spaces in walls, equipment legs and bases, or which occur at points between different elements of construction, or between equipment and floors. Equipment capable of delivering a pinstream of spray should be used. Repeat treatment as needed, but not more often than once every 7 days in restaurants and similar food service establishments, or more often than once every 14 days in other types of food-handling establishments. In case of emergency (call back), Chlorpyrifos 4E may be applied after 2 days from last treatment, but emergency use should be limited to once per month. Applications of this product in food-handling establishments other than as a spot and/or crack and crevice treatment are not permitted.

13813

# CHLORPYRIFOS 4E INSECTICIDE

EPA REG. NO. 34704-66

Note: Where quick "knockdown" and/or "flushing action" is desired, dichlorvos (DDVP) or pyrethrins may be added to the spray mixture containing Chlorpyrifos 4E. For best results, use dichlorvos at a concentration of 0.25% in both water and oil-base sprays; use pyrethrins at 0.25% in water-based sprays and 0.05% in oil-based sprays. Consult labeling for the dichlorvos or pyrethrin products used to determine the amount needed to give the desired spray concentration. Also read and observe all use and handling precautions for these products.

Do not apply water-based sprays of this product in conduits, motor housings, junction and switch boxes, or other electrical equipment because of possible shock hazard. If there is need to treat such areas, use only oil-based sprays. Prior to application, de-energize electrical equipment. After application allow time for oil to evaporate before starting motors or placing switches in the "on" position.

Do not allow spray to contact food, feedstuffs, or water supplies. Thoroughly wash dishes and food-handling utensils with soap and water if they become contaminated by application of this product. Do not allow children or pets to contact treated surfaces until spray has dried. Remove pets and cover fish bowls (tanks) before spraying. Do not introduce the spray into the air or allow the spray to contact food or food-contacting surfaces.

Use Chlorpyrifos 4E to control the pests listed in the following table by application as a 0.25% or 0.5% spray.

## Pest Control Indoors

Pest†	Amount of Chlorpyrifos 4E to Make								Specific Directions
	1 Gallon of Water-Based Spray				1 Gallon of Oil-Based Spray				
	0.25% Spray		0.5% Spray		0.25% Spray		0.5% Spray		
	fl oz	ml	fl oz	ml	fl oz	ml	fl oz	ml	
Ants <sup>1</sup> Cockroaches <sup>2</sup> (American) (Brownbanded) (German) (Oriental) (Smokey brown) Confused flour beetles Crickets Earwigs Firebrats Indian meal moths Mediterranean flour moths Millipedes Red flour beetles Rice weevils Saw-toothed grain beetles Silverfish Spiders	2/3	20	1 1/3	40	1/2	15	1	30	Use the low rate (0.25%) to control light infestations and the high rate (0.5%) to quickly reduce heavy infestations or for extended residual control.  1. For ants, apply to ant trails and around doors and windows and wherever else the pest may find entrance.  2. A period of 4 to 7 days is normally required for maximum effect on cockroaches.
Brown dog ticks <sup>1</sup> Carpet beetles <sup>2</sup> Clover mites			1 1/3	40			1	30	1. For the control of brown dog ticks, thoroughly apply the spray as a spot treatment to infested areas, such as pet beds and resting quarters; nearby cracks and crevices; along baseboards, windows and door frames, and localized areas of floor and floor coverings where these pests may be present. Old bedding should be removed and replaced with clean, fresh bedding after treatment. Do not treat pets with this product.  2. For the control of carpet beetles, thoroughly apply the spray as a spot treatment along baseboards and edges of carpeting, under carpeting, rugs and furniture, in closets and on shelving, and wherever else these insects are seen or suspected.

†Superscripts refer to Specific Directions.

### NOTICE

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